ARCHEOLOGY

Project title:	**Geochemical Investigations of Obsidian Source Material**
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Additional investigators:	Richard Hughes

Objective: To collect provenience and geochemical data on geologic sources of toolstone quality obsidian. This database will be used to compare geochemical data of artifacts for discerning aboriginal use of obsidian sources. This information will be useful in determining patterns of lithic procurement and land use in the Greater Yellowstone Ecosystem and beyond

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Findings:No fieldwork was conducted in YNP during 1999. However, we did conduct collections on private and Forest Service lands in Jackson Hole. This work provides us with a better understanding of two geochemical types in the Teton Pass area.

Project title:	**Miscellaneous Archeological Research in Yellowstone National Park**
Principal investigator:	Dr. Leslie Davis
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Additional investigators:	Brian Reeves

Objective: Fieldwork in 1999 was a combination of research- and compliance-directed inventory and evaluations. The archeological research completed inventory of the Yellowstone River corridor from Fishing Bridge north to the river exit from the park (approximately 100 miles of bank), which was begun in 1997. As part of this work, one site was tested in the Black Canyon of the Yellowstone, revealing a Late Prehistoric camp overlying a Pelican Lake (~2,000 years old) campsite.

Compliance-driven fieldwork included work for the Federal Highway Administration: testing of site 24YE89 on the Mammoth-Gardiner road section, inventory of the highway right-of-way between Madison Junction and West Yellowstone; inventory for the Reese Creek prescribed burn, Bannock Trail inventory, trail reroutes, and inventory for the proposed bison corral at Seven Mile Bridge (and testing of site 48YE644).

Findings: There were 2,847 intensively inventoried acres, with 97 new sites and 15 isolated finds recorded and two sites tested. We are working on research questions regarding cultural chronology (who was here in the past), seasonality, and subsistence. A particular focus has been lithic resource management with sourcing using x-ray fluorescence of obsidian and rhyodacite artifacts. We have begun to source as many specimens as possible from sites, and one site this summer had obsidian artifacts manufactured from five different obsidians. A future step will be to study obsidian source patterning in different parts of the park to see what this will tell us about seasonal movements, source availability, and cultural preferences through time. We have compiled a list of 55 archeological radiocarbon dates for the park. All collected artifacts are being catalogued. These reports were completed and are on file at the Yellowstone Center for Resources.

Project title:	**Miscellaneous Archaeological Investigators in Yellowstone National Park**
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Additional investigators:	Paul H. Sanders

Objective: Miscellaneous archaeological investigations in Yellowstone National Park, including test excavations at sites 24YE14, 48YE867, and 12 sites along the Canyon to Lake Junction road, and a Class III cultural resource inventory of the Otter Creek bear-feeding station.

Findings: The investigation at site 24YE14 revealed stratified natural and cultural deposits within an ephemeral braided stream environment. Four cultural components were radiocarbon dated to 1,560-1,700, 2,350-2,380, 2,510-2,570, and 5,200. Cultural materials included hearth features, faunal remains, and chipped stone tools and debitage from temporary campsite activities. The testing at site 48YE867 consisted of a rough grid system of 75 shovel tests, two of which yielded cultural materials. The 12 sites along the Canyon to Lake road were all prehistoric lithic scatters that varied in size and complexity. Two sites contained buried Paleoindian artifacts, some of the first in Yellowstone. The Class III cultural resource inventory resulted in the recording of the Otter Creek Bear-feeding station, a 1930-1940s tourist attraction.

Project title: **Chemical Analysis of Obsidian Sources and Artifacts from the Northwest and Great Plains USA**

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Additional investigators: Craig E. Skinner

Objective: The major objective of this research is to establish a geochemical database of obsidian sources in the northwestern USA, including sources in the Yellowstone National Park and adjoining areas. Samples of obsidian from various source areas are collected and analyzed by two analytical techniques (neutron activation analysis and x-ray fluorescence analysis) to establish the database. In addition, the source samples are being collected from primary outcrops and secondary deposits to establish the true availability of each obsidian source group to prehistoric peoples. The geographic coordinates of each sample are being entered into the database along with the chemical analysis information. Artifacts will be analyzed similarly and compared to the source database.

Findings: During the fall of 1999, obsidian artifacts from sites in Wyoming and South Dakota were analyzed and compared to the source database for in Yellowstone National Park and the surrounding region. Although the Obsidian Cliff source in Yellowstone National Park was dominant amongst the artifacts, the results were interesting in terms of the distributions and distance from other sources represented. Sources from Idaho and Utah were found in significant numbers to indicate a greater distance of travel than one might have originally anticipated. This research has benefited from the detailed collection and sample analysis undertaken by NAA and XRF in our laboratories.

Project title: **Obsidian Studies: XRF Characterization of Obsidian Sources of Yellowstone National Park**

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Objective: Characterizing obsidian sources for chemical composition using XRF to be able to match prehistoric artifacts to their obsidian source. Yellowstone obsidian has ended up in prehistoric sites in Iowa, Colorado, Wyoming, and several other states, and is useful to study trade and interactions.

Findings: The main Yellowstone source was Obsidian Cliff, and prehistoric obsidian artifacts ended up in many states. The amount that was procured directly and the amount traded down-the-line has not been determined, and this determination of kinds of contact is an active research area.